

CLAIMS

WE CLAIM:

1. An object based interface for an industrial control system comprising:  
a server program receiving communications from a client program employing a standard object protocol;  
a set of software objects including at least two third-party object having differing proprietary object protocols also differing from the standard object protocol; and  
at least two object providers each communicating with the server program and one proprietary object to translate between standard object protocol and an associated one of the proprietary object protocols;  
whereby objects from multiple vendors may be simply utilized by a client program.

10 2. The object based interface of claim 1 wherein the standard object protocol controls object features selected from the group consisting of: object creation, object destruction, setting parameters of the objects, invoking methods of the objects, subscribing to the events of objects, and canceling the event subscriptions.

3. The object based interface of claim 1 wherein the proprietary object protocol controls object features selected from the group consisting of: object creation, object destruction, setting parameters of the objects, invoking methods of the objects, subscribing to the events of objects, and canceling the event subscriptions.

4. The object based interface of claim 1 wherein the standard object protocol includes discover instructions and wherein the object providers respond to the discovery instructions by identifying object features of the software objects with which they are associated.

5. The object based interface of claim 4 wherein the object features identified are selected from the group consisting of: the parameters of the objects, the methods of the objects, and the events of the object.

6. The object based interface of claim 4 wherein the client program communicates with the server program over a network the object providers expose proprietary objects that are associated with a URL.

7. The object-based interface of claim 4 wherein the object providers are software objects that provide encapsulation of data passed to the proprietary software objects.

8. The object based interface of claim 1 wherein the proprietary software objects are selected from the group consisting of Java, Com, C++, XML, and Visual Basic objects.

9. The object based interface of claim 1 further including an interceptor monitoring communications between the server program and the object providers and executing a predetermined program in response to such communications.

10. The object based interface of claim 9 wherein the predetermined program performs at least one of the tasks of verifying license validity and recording a fee for use of the object.

11. The object based interface of claim 1 further including an asserter communicating with the object providers and the proprietary software objects executing a predetermined program in response to such communications.

12. The object based interface of claim 9 wherein predetermined program performs at least one of the tasks of verifying license validity and recording a fee for use of the object.

13. The object based interface of claim 1 including an Internet interface and wherein the client program communicates with the server program through the Internet interface.

14. The object based interface of claim 1 wherein the client program is a Java applet.

15. The object based interface of claim 1 wherein the software objects include graphic display elements.

16. The object based interface of claim 1 wherein the software objects include a graphic control elements.

17. A method for communicating with an industrial control system comprising:

- (a) receiving at a server program, standard object protocol communications from a client program;
- (b) translating by means of an object provider between the standard object

5 protocol communications and at least one proprietary object protocols associated with a proprietary software objects including at least two third-party object having differing proprietary object protocols also differing from the standard object protocol; whereby objects from multiple vendors may be simply utilized by a client program.

18. The method of claim 17 wherein the standard object protocol controls object features selected from the group consisting of: object creation, object destruction, setting parameters of the objects, invoking methods of the objects, subscribing to the events of objects, and canceling the event subscriptions.

19. The method of claim 17 wherein the proprietary object protocol controls object features selected from the group consisting of: object creation, object destruction, setting parameters of the objects, invoking methods of the objects, subscribing to the events of objects, and canceling the event subscriptions.

20. The method of claim 17 wherein the standard object protocol includes discovery instructions and wherein the object providers respond to the discovery instructions by identifying object features of the software objects with which they are associated.

21. The method of claim 20 wherein the object features identified are selected from the group consisting of: the parameters of the objects, the methods of the objects, and the events of the objects.

22. The method of claim 20 wherein the client program communicates with the server program over a network and the object providers expose proprietary objects that are associated with a URL.

23. The method of claim 20 wherein the object providers expose a common software interface that provides an abstraction of the underlying proprietary software object interface.

24. The method of claim 17 wherein the proprietary software objects are selected from the group consisting of Java objects, XML objects, COM, C++, and Visual Basic objects.

25. The method of claim 17 further including monitoring communications between the server program and the object providers using an interceptor program and executing a predetermined program in response to such communications.

26. The method of claim 25 wherein the predetermined program performs at least one of the tasks of verifying license validity and recording a fee for use of the object.

27. The method of claim 17 further including communicating between the object providers and an assertor program executing a predetermined program in response to such communications.

28. The method of claim 25 wherein the predetermined program records a fee for use of the object.

29. The method of claim 17 wherein the client program communicates with the server program through the Internet.

30. The method of claim 17 wherein the client program is a Java applet.

31. The method of claim 17 wherein the software objects include graphic display elements.

32. The method of claim 17 wherein the software objects include a graphic control elements.